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DEPARTMENT OF REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, *Director*

DIVISION OF THE
STATE GEOLOGICAL SURVEY
M. M. LEIGHTON, *Chief*
URBANA

REPORT OF INVESTIGATIONS—NO. 56

ILLINOIS MINERAL INDUSTRY IN 1938

A Preliminary Statistical Summary and
Economic Review

BY

WALTER H. VOSKUIL AND G. N. OLIVER



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URBANA, ILLINOIS

1939

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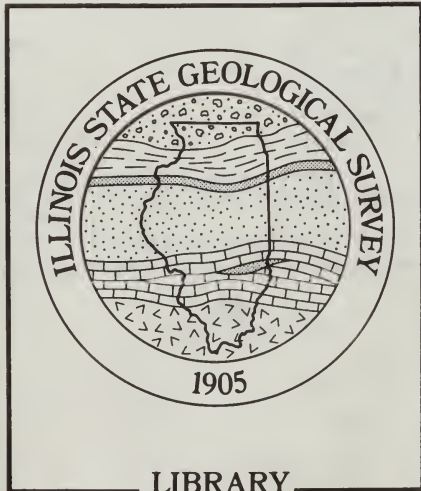
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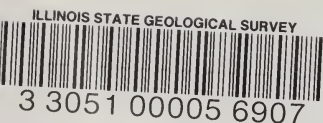
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ILLINOIS MINERAL INDUSTRY IN 1938

A PRELIMINARY STATISTICAL SUMMARY AND ECONOMIC REVIEW

WALTER H. VOSKUIL AND G. N. OLIVER

INTRODUCTION

THE outstanding characteristic of the mineral industry in Illinois in 1938 was the extensive exploration and development of the oil industry in the deep basin area and the rapid increase in oil output. Coal production, on the other hand, fell off sharply due to the decline of industrial productivity in 1938. Temperatures higher than normal in the last three months of 1938 also affected the domestic fuel demand, and coal dealers were slow to replenish stocks. Continued activity in the building industry sustained the demand for building materials. Demand for agricultural limestone exceeded that of 1937. The output of fluorspar was sharply curtailed due to a falling off in production of steel.

The decline in industrial production noticeably affected the demand for industrial minerals. Molding sand declined to 40 per cent in output of the previous year; grinding and polishing sand fell to 50 per cent; fluxing stone declined to 77 per cent, and fluorspar to about 45 per cent. The recovery of industrial production late in 1938 did not show its effect in the demand for mineral raw materials since stock piles were unusually large and ample for several months' supply.

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This report is made possible through the cooperation of the Bureau of Mines of the U. S. Department of the Interior, the Bureau of the Census of the U. S. Department of Commerce, the Illinois State Department of Mines and Minerals, the National Bituminous Coal Commission, and through the generous cooperation of the mineral producers of the State in responding to requests for information.

COAL IN ILLINOIS

OUTPUT IN 1938

Production of coal in the United States and in the principal coal producing districts within the Illinois coal market area is shown in table 2. The output of coal in Illinois in 1938 declined 30.5 per cent from that of the previous year.

The coal output in Illinois by months and by types of mines during 1937 and 1938 is shown in table 3, and the bituminous coal production, by counties and by months, for 1938 is shown in table 4 (pp. 8-9).

DISTRIBUTION

Coal consumed in the Illinois coal market area is received from northern and southern districts of the Appalachian coal producing fields, from Illinois, Indiana, and western Kentucky and, in minor quantities, from the coal-producing states of Iowa, Missouri, North Dakota, Kansas, Arkansas, Wyoming, Colorado, and Montana.

The coal industry suffered a sharp decline in output in 1938 as a result of the decline of industrial production during the greater part of that year. The industry operated throughout the year without the application of minimum prices as contemplated in the Bituminous Coal Act of 1937, and prices fell below those proposed by the Bituminous Coal Commission in its proposed price schedule issued on December 3rd of the previous year.

In the domestic market, gains were registered by the continued increase in the installation of domestic stokers although installations were somewhat less than in the previous year. The market for stokers, however, held up better than that for domestic oil burners.

ILLINOIS MINERAL INDUSTRY

TABLE 1.—SUMMARY OF PRODUCTION AND VALUE OF ILLINOIS MINERALS, 1937-1938

Minerals	1937 ¹		1938	
	Amount ²	Value	Amount ²	Value
Coal.....	51,240,000	\$80,960,000	39,353,000	\$62,964,800
Pig iron ³	3,357,959	70,893,278	1,519,572	30,899,012
Clay Products.....		11,958,913		5,047,320
Coke ³	2,998,663	20,213,129	1,800,000	12,750,000
Cement, Portland, (barrels).....	5,246,102	7,501,926	4,100,000	5,993,644
Sand and gravel (total).....	14,333,482	7,486,605	8,729,915	4,788,125
Structural sand.....	1,353,913	641,718	1,023,497	506,307
Paving and road-making sand.....	1,226,798	541,621	1,034,799	489,329
Glass sand.....	628,020	757,138	(⁵)	(⁵)
Molding sand.....	914,750	855,017	359,363	356,799
Railroad ballast sand ⁴	318,839	88,432	191,565	51,032
Grinding, polishing and blast sand.....	132,002	394,263	61,175	184,258
Engine sand.....	54,975	33,329	38,235	22,501
Fire or furnace sand.....	10,836	12,189	10,432	16,864
Other sands.....	191,864	181,512	547,091	710,838
Structural gravel.....	1,576,257	773,051	1,081,856	565,303
Paving and road-making gravel.....	6,814,600	2,783,383	2,781,580	1,169,935
Railroad ballast gravel ⁴	1,085,331	418,578	1,166,371	392,166
Other gravel.....	24,292	2,779	53,692	26,676
Petroleum.....	7,426,000	9,870,000	23,929,000	24,000,000
Limestone (total).....	9,819,730	8,335,094	8,489,850	7,319,831
Dimension.....			47,360	64,714
Road metal and concrete.....	7,005,530	5,807,103	3,848,513	2,630,966
Flux.....	652,940	371,178	167,549	116,726
Railroad ballast.....	425,950	297,984	101,798	76,476
Riprap.....	270,320	325,222	79,591	84,601
Rubble.....	230	430	3,557	6,562
Agricultural.....	1,282,290	1,252,605	1,068,903	963,902
Other uses.....	164,440	245,698	2,774,097	2,205,745
Rock wool.....		215,000		(⁶)
Mineral paints, zinc and lead pigments.....		(⁵)		(⁵)
Natural gasoline (gallons).....	2,566,882	153,299	(⁶)	(⁶)
Natural gas (M cu. ft.).....			122,300	31,862
Lime.....	142,122	1,039,087	135,256	965,836
Feldspar (ground).....		(⁵)		(⁵)
Fluorspar.....	78,664	1,730,585	(⁶)	751,227
Fuller's earth.....	(⁵)	(⁵)	(⁵)	(⁵)
Quartz (silica).....	96,329	575,251	66,583	418,881
Clay (raw, including that burned at mine or pit).....	161,537	339,706		403,221
Tripoli.....		(⁵)		(⁵)
Lead and silver.....		22,634		16,844
Sandstone.....	23,150	33,584		(⁵)
Zinc.....				(⁵)
Pyrites.....		(⁵)		(⁵)
Other minerals.....		417,126		443,836
Total value.....		\$146,878,270		\$143,853,183

¹Final figures. ²In tons except as noted. ³Value not included in total. ⁴Includes some material used for fills and similar purposes. ⁵Included in "Other minerals." ⁶Not available.

TABLE 2.—PRODUCTION OF COAL, 1937-1938¹
(Thousands of tons)

	1937	1938	DECREASE	
			Amount	Per cent
United States.....	442,455	342,407	100,048	29.2
Illinois.....	51,240	39,353	11,887	30.5
Western Kentucky.....	8,283	7,275	1,008	13.8
Indiana.....	17,270	13,799	3,471	25.1
Iowa.....	3,690	3,250	440	13.5

¹Data from U. S. Bur. Mines Weekly Coal Reports, Nos. 1082, Apr. 9, 1938, and 1132, March 25, 1939.

All-rail shipments into the Illinois market area in 1937 and 1938 from principal fields are summarized in table 5.

The largest shipments of coal from the Appalachian district came from fields in southern West Virginia and eastern Kentucky. Coal from these districts supplies, in part, the coking operations in the Chicago district, and is also used extensively in the domestic heating market.

Detailed data on all-rail coal shipments into the Illinois coal market area is shown in table 6. In each of the principal markets within the Illinois coal market area, there occurred a sharp drop in shipments. It is interesting to note however, that the contribution of Illinois fields to the Chicago market increased from 27 per cent in 1937 to 29 per cent in 1938.

TABLE 5.—ORIGIN OF REVENUE RAILROAD SHIPMENTS OF COAL INTO THE ILLINOIS COAL MARKET AREA FROM ILLINOIS, INDIANA, AND WESTERN KENTUCKY, AND WEST-BOUND FROM OHIO AND THE APPALACHIANS¹, FOR 1937 AND 1938
(Thousands of tons)

	1937		1938	
	Amount	Per cent	Amount	Per cent
Western Pennsylvania.....	3,140	(²)	1,052	(²)
Central Pennsylvania, Somerset-Meyersdale, and Cumberland-Piedmont.....	93,535	(²)	66,896	(²)
Fairmont (W. Va.).....	155,725	(²)	46,500	(²)
Northern and Eastern Ohio.....	13,074	(²)	5,660	(²)
Southern Ohio.....	3,799	(²)	1,843	(²)
Kanawha (W. Va.), Logan and Kenova-Thacker (W. Va.-E. Ky.).....	1,757,623	3.4	1,240,954	3.3
New River-Winding Gulf and Pocahontas-Tug River	9,631,984	18.8	6,096,372	16.0
Northeast Kentucky and McRoberts.....	1,561,994	3.0	1,075,352	2.8
Virginia.....	333,527	(²)	516,083	1.3
Hardin, Hazard, and Southern Appalachian.....	4,614,864	9.0	2,559,895	6.7
Ex-river coal.....	1,232	(²)	1,269	(²)
Northern Illinois.....	3,665,509	7.1	3,453,672	9.1
Central and Southern Illinois.....	22,530,087	43.8	17,032,371	45.0
Indiana.....	5,370,753	10.5	4,412,804	11.6
Western Kentucky.....	1,541,176	3.0	1,362,153	3.6
Total.....	51,278,022		37,872,876	

¹Distribution of Coal Shipments, U. S. Bituminous Coal Commission, M. C. D. No. 92, April 27, 1939.²Less than 1 per cent.

ILLINOIS MINERAL INDUSTRY

TABLE 3.—COAL OUTPUT IN ILLINOIS BY MONTHS AND

	January	February	March	April	May	June
Total output, 1937.....	5,279,062	5,390,630	6,518,304	1,967,339	2,067,090	2,492,189
Total output, 1938.....	4,230,976	3,388,278	2,718,782	2,167,039	1,874,332	2,112,508
Change.....	-1,048,086	-2,002,352	-3,799,522	+199,700	-192,758	-379,681
Strip mines, 1937.....	933,718	1,025,724	1,333,610	450,703	550,598	669,991
Strip mines, 1938.....	813,224	745,676	708,556	623,139	509,500	675,038
Change.....	-120,494	-280,048	-625,054	+172,436	-41,098	+5,047
Shaft mines, 1937.....	4,345,344	4,364,906	5,184,694	1,516,636	1,516,492	1,822,198
Shaft mines, 1938.....	3,417,752	2,642,602	2,010,226	1,543,900	1,364,832	1,437,470
Change.....	-927,592	-1,722,304	-3,174,468	+27,264	-151,660	-384,728

¹Compiled from Monthly Coal Distribution Reports, Illinois State Department of Mines and Minerals.

TABLE 4.—BITUMINOUS COAL PRODUCTION IN ILLINOIS SHIPPING

County	January	February	March	April	May	June
Christian.....	374,406	326,240	300,023	262,342	281,115	252,239
Clinton.....	29,828	12,252	12,000	3,137	1,352	2,859
Franklin.....	1,007,520	734,845	485,012	339,866	335,276	394,458
Fulton.....	151,995	204,121	174,989	180,128	101,126	171,516
Henry.....	60,387	(²)	40,808	51,668	35,662	30,412
Jackson.....	126,201	77,608	(²)	(²)	39,395	(²)
LaSalle.....	48,954	37,426	10,963	12,040	(²)	7,936
Macoupin.....	356,022	310,135	234,342	221,100	185,515	189,604
Madison.....	102,155	34,730	62,942	47,660	25,623	42,764
Montgomery.....	55,737	47,136	54,444	46,426	30,809	36,006
Peoria.....	113,250	101,270	87,827	47,902	65,927	61,037
Perry.....	306,017	247,134	232,040	181,489	163,947	226,727
Randolph.....	91,618	76,145	99,924	73,814	52,858	58,774
Saline.....	359,757	288,420	223,814	145,004	110,471	135,660
Sangamon.....	225,545	178,621	115,834	96,758	77,440	(²)
St. Clair.....	197,305	147,640	104,109	83,201	63,401	68,770
Vermilion.....	142,365	153,683	123,677	95,770	74,871	78,817
Washington.....	21,918	14,333	16,188	24,516	14,490	11,748
Williamson.....	190,377	142,221	122,501	111,843	90,047	150,447
Other counties.....	260,486	254,318	218,345	142,375	125,007	192,734
Total.....	4,230,976	3,388,278	2,718,782	2,167,039	1,874,332	2,112,508
Strip mines.....	813,224	745,676	708,556	623,139	509,500	675,038
Shaft mines.....	3,417,752	2,642,602	2,010,226	1,543,900	1,364,832	1,437,470

¹Compiled from Monthly Coal Distribution Reports: Illinois State Department of Mines and Minerals.²Included in other counties.

COAL INDUSTRY

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BY TYPES OF MINES, 1937 AND 1938¹ (Net tons)

July	August	September	October	November	December	Total
2,732,473	3,005,108	4,087,467	4,651,359	4,489,871	5,221,852	48,502,470
2,192,384	2,760,098	3,329,526	3,529,802	3,976,278	4,562,573	36,842,576
-540,089	-244,010	-757,941	-1,121,557	-513,593	-659,279	-11,659,894
718,388	750,706	1,008,340	1,123,555	1,027,773	1,221,062	10,814,168
583,518	811,320	926,400	966,900	1,103,654	1,187,559	9,654,484
-134,870	+60,614	-81,940	-156,655	+75,881	+33,503	-1,159,684
2,014,085	2,254,402	3,079,127	3,527,804	3,462,098	4,000,790	37,688,302
1,608,866	1,948,778	2,403,126	2,562,902	2,872,624	3,375,014	27,188,092
-405,219	-305,624	-676,001	-964,902	-589,474	-625,776	-10,500,210

MINES, BY COUNTIES AND MONTHS, 1938¹ (Net tons)

July	August	September	October	November	December	Total 1938	Total 1937
241,528	303,600	322,158	307,549	332,844	391,075	3,694,119	4,738,792
2,713	5,521	11,244	14,288	13,804	15,866	124,864	259,583
455,354	621,197	790,585	799,657	871,280	1,060,371	7,895,421	10,109,923
133,958	260,106	248,568	272,210	319,555	348,617	2,566,889	2,935,662
30,494	47,120	58,152	62,777	58,178	63,441	546,984	612,196
89,664	119,172	126,959	132,808	137,960	186,082	1,117,810	1,599,078
2,508	12,962	17,132	16,943	22,785	41,761	238,257	373,359
190,807	232,563	258,861	347,510	348,779	399,345	3,274,583	3,515,120
47,915	55,320	77,513	80,694	101,026	61,951	740,293	1,288,263
32,637	46,011	57,760	58,100	79,007	89,774	633,847	928,586
56,942	74,801	67,000	81,662	87,557	90,879	935,054	1,112,369
163,416	209,742	242,038	262,484	323,008	335,264	2,893,306	3,842,839
(²)	86,996	120,641	94,575	111,524	128,996	1,039,234	1,347,121
174,775	148,859	195,761	281,363	322,545	381,774	2,768,203	3,449,723
110,509	(²)	102,424	86,432	124,077	136,900	1,315,092	2,336,427
82,030	120,072	140,322	144,719	177,843	184,950	1,514,362	1,998,618
76,924	75,167	127,526	112,592	110,469	156,324	1,328,185	1,858,388
19,353	12,270	15,837	15,378	23,637	30,130	219,798	310,826
108,904	132,436	150,364	123,478	176,984	181,490	1,681,092	2,393,992
171,953	196,183	198,681	234,583	233,416	277,583	2,315,183	3,491,605
2,192,384	2,760,098	3,329,526	3,529,802	3,976,278	4,562,573	36,842,576	48,502,470
583,518	811,320	926,400	966,900	1,103,654	1,187,559	9,654,484	10,814,168
1,608,866	1,948,778	2,403,126	2,562,902	2,872,624	3,375,014	27,188,092	37,688,302

TABLE 6.—ORIGIN AND DESTINATION OF REVENUE RAILROAD SHIPMENTS OF
(Exclusive of non-
(Net

From	Chicago District	Illinois other ²	Mil- waukee, Wis.	Wis- consin, other	Council Bluffs, Iowa
1937					
Western Pennsylvania.....	2,278	559	72	231	.....
Central Pennsylvania, Somerset-Meyers- dale and Cumberland Piedmont.....	55,591	4,561	379	6,391	847
Fairmont, W. Va.....	144,680	5,075	46	3,564	.....
Northern and eastern Ohio.....	3,367	2,064	.....	1,178	.....
Southern Ohio.....	1,938	100	.....	393	.....
Kanawha, Logan and Kenova-Thacker... New River-Winding Gulf and Pocahon- tas-Tug River.....	1,335,229	104,980	708	32,969	586
Northeast Kentucky and McRoberts....	8,213,952	415,370	102,406	559,587	.....
Virginia.....	1,074,707	105,693	308	45,465	.....
Hazard, Harlan and Southern Appalach- ians.....	217,398	32,455	2,687	52,747	.....
Ex-river coal.....	3,530,670	396,185	1,375	41,897	396
Northern Illinois.....	136	925	.....	116	.....
Central and Southern Illinois.....	546,388	2,161,089	1,173	152,325	144
Indiana.....	6,196,423	7,708,571	38,369	1,114,757	42,720
Western Kentucky.....	2,924,433	1,251,039	114,253	471,166	434
	532,936	302,017	6,083	186,442	5,554
Grand Total.....	24,780,124	12,490,683	267,859	2,669,228	50,681
Per cent of change over 1936.....	+8.3	+2.8	-11.7	— .4	-29.9
1938					
Western Pennsylvania.....	754	42	256	.....	.....
Central Pennsylvania, Somerset-Myers- dale, and Cumberland-Piedmont.....	26,613	4,712	249	8,441	674
Fairmont, W. Va.....	37,112	4,740	77	2,532	.....
Northern and eastern Ohio.....	1,404	516	.....	1,267	.....
Southern Ohio.....	1,052	.....	.....	73	.....
Kanawha, Logan and Kenova-Thacker... New River-Winding Gulf and Pocahon- tas-Tug River.....	801,911	90,458	599	24,485	560
Northeast Kentucky and McRoberts....	4,858,237	350,434	87,509	498,044	.....
Virginia.....	759,917	84,648	600	36,162	.....
Hazard, Harlan and Southern Appalach- ians.....	368,293	47,249	6,670	68,511	.....
Ex-river coal.....	1,628,665	345,450	192	30,442	391
Northern Illinois.....	.....	1,269	.....	.....	.....
Central and Southern Illinois.....	525,882	1,930,569	1,231	168,526	48
Indiana.....	4,137,957	6,441,092	23,311	953,803	22,215
Western Kentucky.....	2,299,876	1,041,479	79,319	408,480	223
	536,657	254,391	6,832	139,181	3,630
Grand Total.....	15,984,330	10,597,049	206,845	2,339,947	27,741
Per cent of change over 1937.....	-35.5	-15.2	-22.8	-12.3	-45.3

¹Data from National Bituminous Coal Commission, Monthly Coal Distribution Report No. 92, Apr. 27, 1939.

²Includes Davenport, Iowa for shipments from Ohio and the Crescent and includes Davenport, Bettendorf, and Iowaanna, Iowa for shipments from Illinois, Indiana and Western Kentucky; excludes East St. Louis, Illinois.

COAL FROM ILLINOIS, INDIANA, AND KENTUCKY, AND FROM THE APPALACHIANS FOR 1937 AND 1938¹
revenue railroad fuel)
tons)

Iowa, other	St. Louis, Mo.	Kan- sas City, Mo.	St. Joseph, Mo.	Mis- souri, other	Kan- sas, other	Ne- braska, other	Minne- sota	South Da- kota	North Da- kota
<i>1937</i>									
9,711	5,082	1,029	374	1,609	1,552	1,200	4,234	975	.....
2,220							140		.....
6,157							207	101	.....
1,114							254		.....
189,336	52,076			25,979		188	12,906	2,666	.....
79,918	126,113			20,377	75	48	103,613	10,525	.....
180,344	128,125			658		618	24,242	1,834	.....
7,451	290						18,149	2,350	.....
569,956	17,562			914		1,571	46,183	8,155	.....
	28						27		.....
733,675	52			2,557		4,130	61,375	2,423	178
1,716,738	3,950,328	1,713	12,888	996,016	17,689	105,953	503,610	122,650	1,662
446,575	58,969	199		4,703		2,014	95,140	1,731	97
282,440	75,605	50	303	44,092		6,875	73,287	21,329	4,185
4,225,635	4,414,230	2,991	13,565	1,096,905	19,316	122,597	943,347	174,739	6,122
-3.5	+4.3	-23.4	-42.5	+ .1	-17.2	-21.8	-6.1	-14.4	-31.2
<i>1938</i>									
11,371	3,372	948	317	1,574	1,559	1,222	4,689	1,155	.....
1,170							235	34	.....
2,156							317		.....
595							123		.....
170,198	5,463			136,969	13	57	9,263	978	.....
63,658	16,225			104,979	102		109,533	7,651	.....
123,869	5,723			43,083		528	19,024	1,798	.....
7,614	1,131						14,914	1,701	.....
499,755	15,125			1,234		1,118	33,859	3,664	.....
768,863	42			398			57,463	620	30
1,313,317	2,889,937	781	4,856	692,569	10,595	77,894	365,862	97,026	1,156
403,104	62,536	201		6,085		1,906	105,974	3,593	28
227,051	48,373		218	49,199		7,611	62,714	21,652	4,644
3,593,321	3,047,927	1,930	5,391	1,036,090	12,269	90,336	783,970	139,872	5,858
-15.0	-31.0	-35.5	-60.3	-5.5	-36.5	-26.3	-16.9	-20.0	-4.3

LAKE CARGO SHIPMENTS

Coal for the lake cargo trade was supplied by West Virginia, Eastern Kentucky, Pennsylvania, and Ohio in the following quantities in 1937 and 1938.

TABLE 7.—SHIPMENTS OF BITUMINOUS COAL TO GREAT LAKE PORTS FOR CARGO, 1937 AND 1938¹
(Thousands of tons)

	1937	1938	Per cent change
West Virginia.....	22,052	17,434	—21
Pennsylvania.....	11,127	7,743	—33
Eastern Kentucky.....	7,785	6,968	—11
Ohio.....	2,682	2,027	—24
Total.....	43,646	34,172	

¹National Bituminous Coal Commission, Monthly Coal Distribution Report No. 91, March 29, 1939.

Table 8 shows the coal tonnage delivered to Lake Superior and Lake Michigan ports for the last two years.

TABLE 8.—DELIVERIES OF LAKE CARGO COAL TO LAKE MICHIGAN AND LAKE SUPERIOR PORTS IN 1937 AND 1938¹
(Thousands of net tons)

	1937	1938
To Lake Superior.....	10,632	7,451
Lake Michigan.....	12,427	10,548
Total.....	23,059	17,999

¹National Bituminous Coal Commission, Monthly Coal Distribution Report No. 90, February 24, 1939.

Factors accounting for a decline in shipments in 1938 are the industrial recession and the unusually high accumulation of stocks in Upper Lake ports. Stocks on hand for the last three years are shown in table 9.

TABLE 9.—COAL STOCKS IN LAKE SUPERIOR AND LAKE MICHIGAN PORTS, DECEMBER 31, 1936-38¹
(Thousands of net tons)

Year	Lake Superior docks	Lake Michigan docks	Total
1936.....	5,019	2,723	7,742
1937.....	5,523	2,748	8,271
1938.....	5,388	2,493	7,981

¹National Bituminous Coal Commission, Monthly Coal Distribution Report No. 90, February 24, 1939.

LAKE MICHIGAN COAL MARKET AREA

Five railroads have applied to the Interstate Commerce Commission for a reduction in rates from coal-producing districts in Illinois, Indiana, and western Kentucky to Chicago on coal destined for lake cargo traffic. The following schedules illustrate the reductions involved:

RATES TO CHICAGO IN CENTS PER TON OF 2,000 POUNDS

<i>From districts</i>	<i>Present track delivery rates</i>	<i>Proposed lake cargo rates</i>
Clinton, Ind.....	165	125
Linton, Ind.....	175	132
Southern Illinois.....	205	155
Western Kentucky.....	240	190

Track delivery rates are rates from the district to Chicago as if the transit ended at the latter point, whereas the proposed rate would apply only to shipments which were destined to lake-cargo points beyond Chicago.

The present rate of delivering coal to Milwaukee by rail-lake haul from representative Appalachian fields is approximately as shown in Table 10.

TABLE 10.—TRANSPORTATION RATES FROM SELECTED APPALACHIAN FIELDS TO MILWAUKEE
(In cents per ton of 2000 pounds)

Field of Origin	Rail to lower lake docks	Loading charge rail to vessel	Lake haul	Total
Pittsburgh, Pa.	156	9	50-70	215-235
Connellsville, Pa. . .	164	9	50-70	223-243
Pocahontas-Tug River, W. Va. . . .	206	9	50-70	265-285

Hitherto the coal market in Lake Michigan ports, in both Wisconsin and Michigan, has been supplied almost exclusively by shipments from eastern fields *via* the lakes. The rate reduction, if granted, may open part of this market to coal operators in the Eastern Interior field. There is at present a market of approximately 9,000,000 tons in Wisconsin and Michigan ports, as indicated in table 11.

An important aspect of the proposed development of a lake cargo market for Illinois coal is its possible effect upon operating

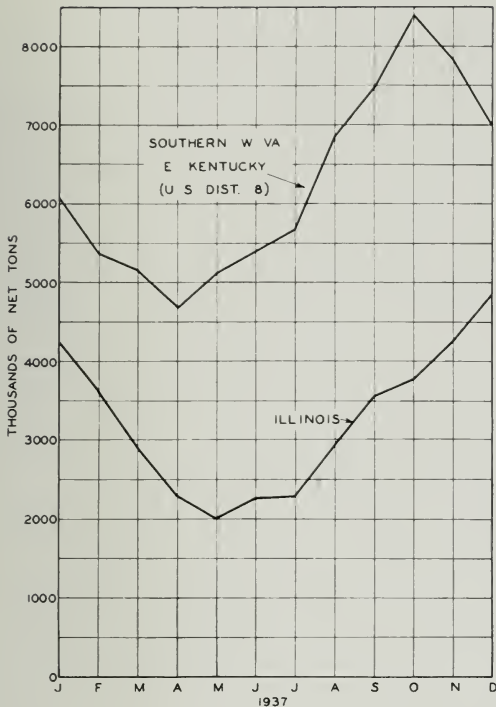


FIG. 1.—Coal output in U. S. District 8 and in Illinois, by months, in 1937.

activity in the summer months. Coal shipped to lake ports must be transported during the navigation season and stored for winter consumption. This has enabled eastern coal producers, who now supply the Upper Lake Docks market, to maintain a higher rate of mining activity in summer months than Illinois producers who depend wholly upon all-rail haul. This is shown in figure 1 in the comparative monthly output of coal in 1938 from Illinois and from U. S. Coal Commission district No. 8 (composed mainly of southern West Virginia and eastern Kentucky producing districts). These districts ship large tonnages of coal to the lake cargo market.

Certain difficulties must be recognized in attempting to enter the Lake Michigan market. In many cases, the power plant equipment of industrial plants is designed to burn eastern coals. Changes in design of equipment may be necessary in some cases if Illinois coal is to be used. A substantial reduction in the cost of coal will be necessary to persuade customers to make the change.

Domestic consumers are accustomed to the use of these eastern coals for household heating and will be slow to change to a new fuel supply.

Market connections will have to be established with industrial consumers and retail distributors in lake ports. Dock space for unloading and storage of coal will have to be provided or arrangements made with existing dock companies.

TABLE 11.—COAL RECEIVED AT LAKE MICHIGAN PORTS, SEASON OF 1936¹
(In short tons)

Wisconsin:	
Manistique.....	24,080
Menominee.....	372,541
Green Bay.....	1,383,942
Fox River.....	258,455
Sturgeon Bay and Lake Michigan	
Ship Canal.....	26,201
Algoma Harbor.....	4,036
Kewaunee.....	3,826
(Car-ferry).....	56,425
Two Rivers.....	37,114
Manitowoc.....	325,671
(Car-ferry).....	224,527
Sheboygan.....	431,300
Port Washington.....	185,947
Milwaukee.....	3,702,855
(Car-ferry).....	487,845
Racine.....	309,165
Kenosha.....	35,855
Michigan:	
St. Joseph.....	58,958
South Haven.....	21,562
Holland.....	24,191
Grand Haven.....	57,221
Muskegon.....	188,678
White Lake.....	3,213
Ludington.....	36,464
Manistee.....	132,510
Port Inland Harbor.....	2,286
Gladstone Harbor.....	12,640
Escanaba.....	288,087
Traverse City.....	18,884
Petoskey Portland Cement Co....	82,134
Total.....	8,796,613

¹Annual Reports, War Dept., Rept. of Chief of Engineers, U. S. Army, Part 2, 1937.

TABLE 12.—CONSUMPTION OF NATURAL GAS IN THE ILLINOIS COAL MARKET AREA, 1937¹
(Millions of cubic feet)

	Illinois	Minnesota	Iowa	Missouri	South Dakota	Nebraska
Domestic and commercial. . .	22,863	4,984	5,118	15,013	2,306	6,192
Field.	1,275			409		
Petroleum refineries.	101					
Electric utility plants.	3,733	1,337	4,733	1,410	968	2,819
Industrial, other.	50,678	6,790	11,503	23,170	2,245	8,252
Total.	78,650	13,111	21,354	40,002	5,519	17,263

¹U. S. Bur. Mines, M. M. S. No. 682, Jan. 13, 1938.

NATURAL GAS

Consumption of natural gas in the Illinois fuel market area continued its upward trend in 1938. Detailed data for gas consumption in 1938 are not yet available. Consumption of natural gas in 1937 is shown in table 12.

Imports of gas into the Illinois coal market area for the years 1935-37 are shown in table 13.

OIL

The economic position of the oil industry in Illinois is intimately related to conditions in the oil industry throughout the nation and it is therefore pertinent to review briefly the market trends in the oil industry in 1938 and their possible effect upon conditions in 1939. Markets for both crude petroleum and its refined products, particularly gasoline, gas oil and distillate fuel, and residual fuel oil are sensitive to changes in the relation of supply to demand. In an oil-producing district particular attention should be given to the stock of supply of each of the products of petroleum and to the markets available for their disposal. For this purpose a brief summary of supply of oils and of market demand is given for the years 1937 and 1938. The record of production and the trend of the market in those years may be useful in evaluating market problems in 1939. The total new supply of petroleum and other oils in 1937 was 1,215,-450,000 barrels, and in 1938 was 1,125,-512,000 barrels, calculated in table 14.

TABLE 13.—NATURAL GAS IMPORTED INTO THE ILLINOIS COAL MARKET AREA, 1935-37¹
(Millions of cubic feet)

From	1935	1936	1937
To ILLINOIS			
Oklahoma.		18	81
Kansas.	2,107	2,385	2,973
Louisiana.	13,574	17,214	17,367
Missouri.	163	53	34
Texas.	39,886	51,800	56,957
Kentucky.	110	89	133
Indiana.	34	95	65
Total.	55,874	71,654	77,610
To MISSOURI			
Kansas.	3,799	6,896	7,783
Louisiana.	10,517	12,205	14,843
Oklahoma.	6,342	7,474	10,321
Texas.	12,024	13,284	13,650
Total.	32,682	39,859	46,597
To IOWA			
Kansas.	6,980	6,964	7,026
Texas.	12,096	13,954	14,328
Oklahoma.	1		
Total.	19,077	20,918	21,354
To NEBRASKA			
Kansas.	7,727	8,555	8,464
Oklahoma.	455	507	631
Texas.	5,454	6,814	7,159
Wyoming.	675	904	1,009
Total.	14,311	16,780	17,263
To MINNESOTA			
Kansas.	6,025	6,141	6,214
Oklahoma.	2		
Texas.	4,552	5,777	6,897
Total.	10,579	11,918	13,111
Grand total.	132,552	161,129	175,935

¹U. S. Bur. Mines, Annual Mineral Market Reports.

TABLE 14.—NEW SUPPLY OF ALL OILS IN THE UNITED STATES IN 1937 AND 1938¹
(Thousands of barrels)

	1937	1938
Production		
Crude petroleum.....	1,279,160	1,213,254
Natural gasoline ²	49,177	50,317
Benzol ³	2,790	1,699
Imports		
Crude petroleum.....	27,484	26,412
Refined products.....	29,673	27,736
Gross total of new supply	1,388,284	1,319,418
Less exports of Crude petroleum.....	67,234	77,273
Refined products.	105,600	116,633
Net new supply.....	1,215,450	1,125,512
Stocks, crude and refined products, Dec. 31..	564,997	555,263
Day's supply.....	154	153

¹Monthly Petroleum Statement No. 180, U. S. Bur. Mines, Feb. 9, 1939.

²Natural gasoline is recovered from natural gas and is used in blending with gasoline refined from crude oil.

³Benzol is a by-product of coke manufacture and is used in blending with gasoline for motor fuel.

There is also, besides the current annual production of petroleum and other oils, a substantial quantity of crude oil in reserve above ground in stocks.

In addition to the current annual production and the stocks of crude and refined products on hand, there is a reserve productive capacity which is capable of supplying crude oil considerably in excess of current output. This is illustrated in the performance of production during the first week of November 1938 when the daily average oil production rose from 3,244,282 barrels for the week ending October 29 to 3,639,151 barrels for the week ending November 5. This was an increase of 394,862 barrels daily average or an increase of 12.2 per cent. The following week, in conformity to the proration regulations and the weekly two-day shut-down in Texas, production again dropped to 3,243,796 barrels daily average. Average daily demand is approximately 3,300,000 barrels.

STOCKS OF CRUDE OIL AND REFINED PRODUCTS

A reserve of oil stocks, of both crude petroleum and refined products, is necessary for the maintenance of an adequate

supply for the market. Differences between current daily supply and demand are regulated by adding crude petroleum or refined products to stocks when production exceeds consumption and by withdrawal of oils from stocks when consumption exceeds production.

Accumulation of stocks of both crude petroleum and refined products may result from excess of current production over consumption, seasonal variations in demand for oil products, changes in demand brought about by decrease or increase of industrial activity or by unusual weather conditions.

The demand for all types of refined products is subject to seasonal variation so that a supply of oil in stocks is essential to provide storage in periods of excess production and to provide market requirements when current production falls below demand.

With the productive capacity of both wells and refineries more than ample to supply current market requirements, there occurs at frequent intervals an oversupply of oil and an unusually heavy accumulation of stocks. If this condition is prolonged the price structure is affected. One of these recurring periods of excess production occurred in late 1937, the effects of which were felt through 1938.

During this period production rose to 1,279,160,000 barrels in 1937, an all-time high record, and to 1,213,254,000 barrels in 1938. The decrease in the latter year was accomplished mainly by Saturday and Sunday shut-downs in Texas.

The high productivity of this period resulted in a gradual building up of total stocks of principal products (crude petroleum, gasoline, kerosene, gas oil and distillate fuel, and residual fuel oil) from a level of 459,000,000 barrels in January 1937 to 524,000,000 barrels in April 1938, after which there was a slow rise to 555,000,000 barrels in December 1938. The peak in crude stocks occurred in August 1937; of gasoline, in March 1938; of gas oil and distillate fuel in September 1938; and of residual fuel oil in September 1938.

The rise in total stocks throughout 1937 and into 1938 followed the high production and runs-to-stills. Only after the reduction of output from a high daily average of 3,713,000 barrels in August 1937, and subsequent sharp curtailments beginning in May

TABLE 15.—CONSUMPTION OF PRINCIPAL REFINED PRODUCTS BY MONTHS, 1937–1938¹
(Thousands of barrels)

Month	GASOLINE		GAS OIL AND DISTILLATE FUEL		RESIDUAL FUEL OIL	
	1937	1938	1937	1938	1937	1938
January.....	35,719	37,533	17,044	14,899	26,393	22,789
February.....	33,330	34,565	12,083	13,802	24,959	20,984
March.....	42,195	44,099	12,492	13,297	27,217	23,855
April.....	45,227	46,933	10,509	10,487	25,013	20,042
May.....	47,919	48,342	9,596	9,747	23,315	21,066
June.....	50,408	51,509	8,882	8,470	23,703	20,751
July.....	52,924	51,108	9,674	10,867	23,963	19,653
August.....	52,545	54,327	10,243	10,470	23,670	23,235
September.....	50,999	48,708	11,613	11,055	24,586	22,192
October.....	48,087	49,298	12,504	11,663	25,024	25,287
November.....	45,286	47,459	14,464	13,741	25,521	26,805
December.....	40,900	45,924	17,849	18,069	24,014	29,418
Total.....	545,539	559,805	146,953	146,567	298,378	276,077

¹U. S. Bur. Mines, Monthly Petroleum Statements.

1938, was it possible to reduce stocks of crude and, by reducing runs-to-stills, also reduce gasoline stocks. The increased supplies of stocks in the distillate and fuel oil groups remained and had a depressing effect upon the market. The continued rise in stocks of fuel oils in spite of a decline in production of crude oil, runs-to-stills, and gasoline productions, merits further analysis.

In figure 2 is shown the consumption of three of the major refined oil products, gasoline, gas oil and distillate fuel, and residual fuels, by months, in 1937 and 1938. The figures for consumption are obtained by adding current withdrawals from stocks to production or by subtracting additions to stocks from monthly production. The resulting figure is taken as the apparent consumption for the month. Consumption of each of these products for the years 1937 and 1938 is shown in table 15.

Table 16 and figure 2 illustrate the second and third factors in the oil market affecting the accumulation of stocks, namely, the seasonality of demand, and the state of industrial activity.

Of particular interest is the smaller demand for gas oil and distillate fuel in the last quarter of 1938 as compared with the previous year. Unusually mild weather in the last three months of 1938 affected the

demand for heating oils. In Urbana, Illinois, for example, degree days for the heating season, September to December inclusive, totalled 1839 as compared with 2366 for the same period in 1937. The effect was to decrease consumption of oils for heating purposes by 22 per cent.

Demand for residual fuel oils was relatively low through the first three quarters of 1938. Recovery of industrial activity in the latter part of the year was reflected in increased sales of fuel oils.

The trend of demand and the ensuing accumulation of stocks, as occurred in 1937 and 1938, merely illustrate some of the problems that arise in the disposal of oil products. An excessive supply of total stocks can be avoided only by a continued program of adjusting crude oil production and runs-to-stills to annual market demand. Temporary accumulation of stocks due to the seasonal nature of the market is to a certain extent unavoidable. This is particularly true of gasoline and of heating oil stocks, the high demand for which occurs at nearly opposite seasons of the year. If the heating oil market expands considerably beyond its present level, there will follow a larger production of this fraction, and also a larger seasonal accumulation of stocks. Under such conditions it may prove to be economical for

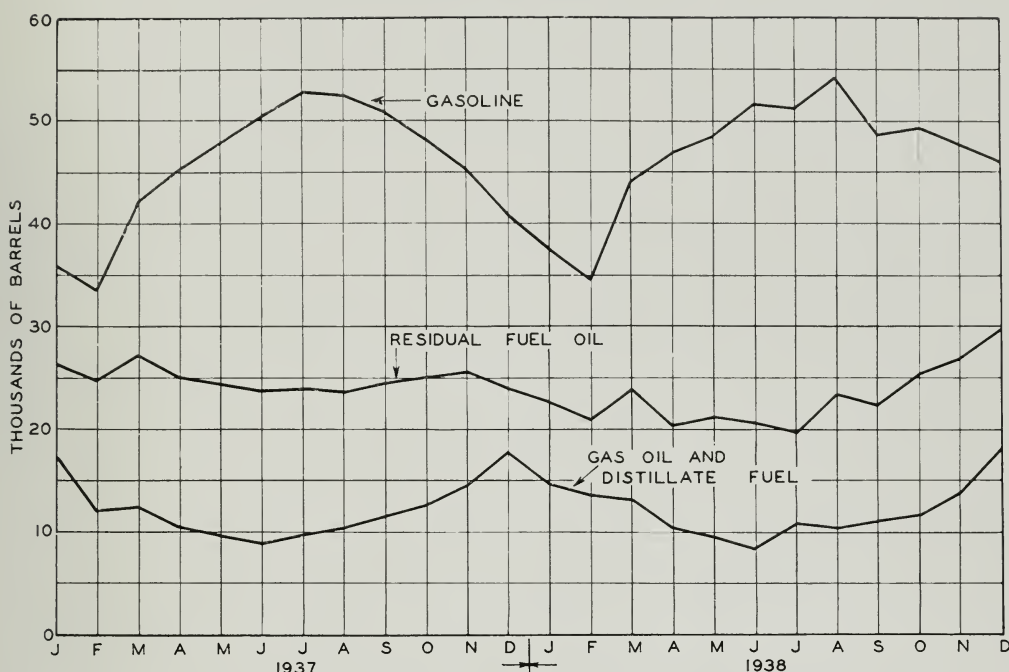


FIG. 2.—Consumption of gasoline, residual fuel oil, and gas oil and distillate fuel, by months, in 1937 and 1938.

the refinery industry to reduce its gasoline recovery in the late autumn months and correspondingly increase its output of heating oils. Such a program will tend to minimize accumulation of gasoline stocks in the winter months and also supply a greater portion of the heating market from current output. Such a program will be most advantageous to the complete refineries, whose operations are more flexible than those of skimming and topping plants.

With regard to variations in demand for residual oil due to a decline in industrial activity, there appears to be no ready solution for the disposal of this product. Even if such oil production were decreased materially, the practical limits of a refinery do not permit a reduction of output of residual oils to meet market demand without falling short of the demand for gasoline and heating oils. A probable solution of this problem in the future may be accomplished through the development of catalytic cracking plants for the conversion of some of the heavy oils into lighter fractions.

ILLINOIS PETROLEUM INDUSTRY

Production of petroleum in Illinois increased substantially in 1938 over that of

1937. The production by months for these years is shown in table 16.

TABLE 16.—PRODUCTION OF PETROLEUM IN ILLINOIS, 1937 AND 1938¹
(Thousands of barrels)

Month	1937	1938
January.....	368	1,128
February.....	343	1,108
March.....	410	1,330
April.....	386	1,388
May.....	416	1,440
June.....	463	1,361
July.....	530	1,642
August.....	674	2,062
September.....	849	2,553
October.....	912	2,768
November.....	990	3,067
December.....	1,085	3,981
Total.....	7,426	23,929

¹U. S. Bur. Mines, Monthly Petroleum Statements.

DISTRIBUTION

Distribution of crude petroleum from Illinois fields in 1937 and 1938 and the market for refined products in the territory served by refineries in the Central Refining District is discussed in detail in Report of Investigations No. 54.

TABLE 17.—CONSUMPTION OF OIL PRODUCTS IN ILLINOIS, 1934-1937¹
(Thousands of barrels)

	1934	1935	1936	1937
Gasoline.....	24,427	25,458	28,379	30,794
Distillate.....	5,534	6,044	8,158	9,873
Residual fuel oil.....	7,672	8,993	10,193	10,719
Total of above.....	37,633	40,495	46,730	51,386
Crude oil requirements ²	47,500	50,000	57,600	61,400

¹U. S. Bur. Mines, Mineral Market Reports No. 625, Jan. 27, 1938; and 708, Feb. 16, 1939.

²Estimated on the basis that the three refined products included above are 84 per cent of the crude oil required for their manufacture.

ILLINOIS AS A CONSUMER OF OIL
PRODUCTS

Consumption of principal refined products for the years 1934 to 1937 are shown in table 17. The quantity of crude oil required to supply the refinery products consumed in Illinois is calculated on the basis that 100 barrels of crude are required to manufacture 84 barrels of gasoline, distillate, and residual fuel oil.

Consumption of petroleum products is not likely to show an unusual increase because of the rapid increase in output of crude oil in the State. The use of gasoline is governed more or less by the number of automobile registrations. The use of fuel oil for domestic heating and for industrial heat and power is most prevalent in the large urban centers near refineries where transportation costs on fuel from refinery to consumer are a small item in the delivered cost of fuel.

CEMENT

Cement shipped to consumers in 1938 fell below the level of 1937 by 513,218 barrels. The record for these years is as follows:

	<i>Barrels</i>
Shipments in 1937.....	6,945,083
Shipments in 1938.....	6,431,865
Decrease.....	513,218

A sharp decrease in cement shipments occurred in October 1937, and shipments continued below normal until August 1938, after which there was a marked recovery during the remainder of the year. Monthly shipments for 1937 and 1938 are shown in table 18.

TABLE 18.—CEMENT SHIPMENTS INTO ILLINOIS,
BY MONTHS, FOR 1937 AND 1938¹
(Barrels)

	1937	1938
January.....	193,149	135,402
February.....	213,010	172,662
March.....	416,763	407,554
April.....	569,124	422,934
May.....	855,215	480,206
June.....	897,783	588,835
July.....	898,682	675,301
August.....	898,523	839,281
September.....	830,163	839,549
October.....	638,401	1,023,274
November.....	377,691	536,722
December.....	156,579	311,095
Total.....	6,945,083	6,431,865

¹Monthly Cement Statements, U. S. Bureau of Mines.

AGRICULTURAL LIMESTONE

Consumption of agricultural limestone in 1938 was maintained above the million ton mark. The market for agricultural limestone is not yet fully developed, as shown by the wide variation in consumption per acre among the counties of the State. A preliminary report on "Agricultural Limestone Distribution in 1938" was issued as Circular No. 47. This report contains data on forms of land tenure by counties and also on calculated consumption of agricultural limestone per acre of arable land. For these data, the reader is referred to this circular. Table 19 contains data on distribution of limestone, by counties, revised to include figures which were received since the preliminary report was issued.

TABLE 19.—REPORTED AGRICULTURAL LIMESTONE USED IN ILLINOIS DURING 1937 AND 1938

County	1937	1938		Total used in 1938
		Produced in Illinois	Produced in other states	
Adams.....	12,162	15,946	537	16,483
Alexander.....	191	94		94
Bond.....	11,619	17,901	357	18,258
Boone.....	501	(¹)		(¹)
Brown.....	1,907	398		398
Bureau.....	12,602	12,764	356	13,120
Calhoun.....	3,203	4,000		4,000
Carroll.....	2,200	(²)	(²)	2,089
Cass.....	910	903		903
Champaign.....	20,800	20,347	10	20,357
Christian.....	14,011	23,999	45	24,042
Clark.....	11,206	19,422	228	19,650
Clay.....	2,033	1,111	595	1,706
Clinton.....	25,552	23,132		22,132
Coles.....	3,803	1,327	1	1,328
Cook.....	12,199	14,566	56	14,622
Crawford.....	4,164	2,510		2,510
Cumberland.....	5,099	5,702	874	6,576
DeKalb.....	6,330	8,000		8,000
DeWitt.....	12,156	10,757		10,757
Douglas.....	5,452	7,345	219	7,564
DuPage.....	7,424	6,452	259	6,711
Edgar.....	5,095	2,190	1,568	3,758
Edwards.....	9,159	7,034	1,170	8,204
Effingham.....	11,812	12,356	12,065	24,421
Fayette.....	13,763	15,579	422	16,001
Ford.....	17,688	21,264		21,264
Franklin.....	9,875	6,753	63	6,816
Fulton.....	7,877	3,324	1,725	5,049
Gallatin.....	2,142	2,564		2,564
Greene.....	11,147	21,045		21,045
Grundy.....	5,746	6,262		6,262
Hamilton.....	5,073	3,494	721	4,215
Hancock.....	12,995	7,488	362	7,850
Hardin.....	2,091	2,251		2,251
Henderson.....	11,500	(¹)	(¹)	(¹)
Henry.....	23,201	17,229	12,771	30,000
Iroquois.....	31,767	17,345	10,490	27,835
Jackson.....	12,212	7,901		7,901
Jasper.....	7,876	8,719	202	8,921
Jefferson.....	8,744	22,414	1,408	23,822
Jersey.....	49,022	14,100		14,100
Jo Daviess.....	2,008	4,543	2,057	6,600
Johnson.....	1,957	1,164		1,164
Kane.....	9,709	7,293		7,293
Kankakee.....	15,634	20,683		20,683
Kendall.....	9,514	9,098		9,098
Knox.....	21,418	2,783	8,248	11,031
Lake.....	2,462	2,711	26	2,737
LaSalle.....	28,537	28,838		28,838
Lawrence.....	3,465	452	1,069	1,521
Lee.....	11,730	37,000		37,000
Livingston.....	44,639	49,022		49,022
Logan.....	2,380	15,339		15,339
McDonough.....	4,812	4,611	2,637	7,248
McHenry.....	6,874	2,430	163	2,593
McLean.....	40,154	58,120		58,120
Macon.....	10,833	7,838	368	8,206
Macoupin.....	6,185	8,240		8,240
Madison.....	30,779	24,702		24,702
Marion.....	14,578	18,873	5,963	24,836
Marshall.....	11,265	11,531		11,531

TABLE 19.—REPORTED AGRICULTURAL LIMESTONE USED IN ILLINOIS DURING 1937 AND 1938

County	1937	1938		Total used in 1938
		Produced in Illinois	Produced in other states	
Mason.....	6,625	9,603		9,603
Massac.....	827	439		439
Menard.....	1,629	2,787		2,787
Mercer.....	11,129	(²)	(²)	4,985
Monroe.....	40,642	28,017		28,017
Montgomery.....	15,153	21,851	50	21,901
Morgan.....	2,487	2,317	2,785	5,102
Moultrie.....	3,689	4,519	533	5,052
Ogle.....	62	35,000		35,000
Peoria.....	21,495	8,925	2,853	11,778
Perry.....	7,982	7,094		7,094
Piatt.....	9,694	8,702	215	8,917
Pike.....	2,122	143	105	248
Pope.....	3,831	1,218		1,218
Pulaski.....	287	405		405
Putnam.....	4,548	9,336		9,336
Randolph.....	27,734	16,322	1,255	17,577
Richland.....	8,911	6,392	108	6,500
Rock Island.....	20,838	(²)	(²)	8,286
St. Clair.....	36,489	37,374		37,374
Saline.....	4,745	5,762		5,762
Sangamon.....	6,326	14,598		14,598
Schuyler.....	823	358	42	400
Scott.....	3,400	6,399	162	6,561
Shelby.....	14,821	14,625	346	14,971
Stark.....	8,200	1,425	8,286	9,711
Stephenson.....	(³)	35,000		35,000
Tazewell.....	8,984	15,215		15,215
Union.....	8,608	8,290		8,290
Vermilion.....	25,809	13,047	3,640	16,687
Wabash.....	12,167	483	2,811	3,294
Warren.....	14,924	12,758	514	13,272
Washington.....	26,225	15,535	9,018	24,553
Wayne.....	11,176	5,059	530	5,589
White.....	20,647	1,019	7,135	8,154
Whiteside.....	4,859	(²)	(²)	5,348
Will.....	19,050	11,454		11,454
Williamson.....	2,198	3,285		3,285
Winnebago.....	3,700	25,000		25,000
Woodford.....	21,953	18,254		18,254
Trucked, county unknown.....	25,013	38,862		38,862
Total.....	1,158,040	1,158,131	118,740	1,285,260

¹No report received.²Figures concealed in total.³Figures not available.

FLUORSPAR¹

Illinois shipped 44 per cent of the fluor-spar delivered to consumers in the United States in 1938. Shipments from Kentucky were 43 per cent, and the remaining 13 per cent was shipped from New Mexico, Nevada, Colorado, Arizona, Utah and New Hampshire. The year 1938 represented a sharp reduction in demand from the previous year. Comparative data for 1937 and 1938 are shown in table 20.

Detailed shipments of fluor-spar in the United States are shown in table 21.

Imports of fluor-spar into the United States are obtained mainly from France, Germany, and Newfoundland. Shipments from Ger-

TABLE 20.—FLUORSPAR INDUSTRY IN 1937
AND 1938
(In short tons)

	1937	1938
Consumption.....	194,300	115,100
Production.....	183,000	99,000
Shipments from domestic mines.....	181,230	80,403
Imports.....	37,063	19,622
Average domestic price per ton.....	\$20.23	\$19.90
Imported fluor-spar, duty paid, price per ton.....	\$23.66	\$23.93

TABLE 21.—FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES, BY STATES

State	1937			1938		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Illinois.....	78,664	\$1,730,585	\$22.00	35,368	\$751,227	\$21.24
Kentucky.....	87,296	1,710,122	19.59	34,803	678,094	19.48
New Mexico.....	3,324	105,733	18.02	4,066	127,655	18.30
Nevada.....	2,544			2,909		
Colorado.....	7,883	98,493	12.49	1,704	42,680	13.10
Arizona.....	610			1,093		
Utah.....	478	21,696	14.28	370		
New Hampshire.....	431			90		
Total.....	181,230	3,666,629	20.23	80,403	1,599,666	19.90

TABLE 22.—FLUORSPAR IMPORTED INTO THE UNITED STATES, 1937-1938, BY COUNTRIES

	1937		1938	
	Short tons	Value	Short tons	Value
France.....	14,158	\$ 80,816	7,411	\$ 67,097
Germany.....	14,501	219,393	3,062	51,304
Italy.....	1,124	5,752		
Mexico.....			85	1,263
Newfoundland.....	5,520	67,723	4,752	103,909
Spain.....	566	4,464	309	3,535
Tunisia.....	656	8,256	1,572	18,251
Union of South Africa.....	538	11,223	1,787	38,047
United Kingdom.....			644	4,237
	37,063	397,627	19,622	287,643

¹Data from Mineral Market Reports No. M. M. S. 741, U. S. Department of the Interior, May 8, 1939.

TABLE 23.—FLUORSPAR CONSUMED AND IN STOCK IN THE UNITED STATES, 1937 AND 1938,
BY INDUSTRIES, IN SHORT TONS
(Partly estimated by Bureau of Mines)

Industry	1937		1938	
	Consumption	Stocks at consumers' plants Dec. 31	Consumption	Stocks at consumers' plants Dec. 31
Basic open-hearth steel.....	138,900	71,400	73,600	55,000
Electric-furnace steel.....	7,500	1,300	4,000	1,000
Foundry.....	2,500	800	2,000	800
Ferro-alloys.....	1,200	700	800	400
Hydrofluoric acid.....	24,100	9,900	18,900	11,200
Enamel.....	5,900	1,500	4,000	900
Glass.....	11,600	3,200	10,500	1,600
Miscellaneous.....	2,600	1,300	1,300	900
	194,300	90,100	115,100	71,800

many dropped sharply in 1938 and a further decrease may be anticipated in 1939. On the other hand, shipments from Tunisia and Union of South Africa increased in spite of a sharp curtailment of imports. Imports by countries is shown in table 22.

The iron and steel industries absorb 70 per cent of fluorspar consumed in industry. Other principal uses are the ceramic industries and the manufacture of hydrofluoric acid. Detailed consumption data are shown in table 23.

BUILDING INDUSTRY

Building permits in 23 Illinois cities in 1938 totaled \$73,363,831 in value, distributed as follows:

Nonresidential construction.....	\$29,231,500
Residential construction.....	30,037,838
Total new construction.....	59,269,338
Repairs.....	14,094,493
Total of all construction.....	\$73,363,831

The record of building permits for 23 Illinois cities is shown in table 24.

There was a substantial rise in building activity toward the end of the year as shown by the monthly value of building permits issued for new construction of both residential and nonresidential building. The trend of activity is shown in figure 3.

Among the cities in Illinois with a population of 25,000 or more, the greatest build-

ing activity in 1938 occurred in Belleville. Other cities in which the construction industry was active are: Evanston, Moline, Decatur, Granite City, Peoria, Berwyn, Rock Island, and Springfield. Each of these cities issued building permits in excess of \$25,000 per thousand population.

TABLE 24.—VALUE OF BUILDING PERMITS IN 23 ILLINOIS CITIES, 1938¹

Alton.....	\$ 369,733
Aurora.....	669,805
Belleville.....	2,557,830
Berwyn.....	1,146,091
Bloomington.....	345,160
Chicago.....	29,350,354
Cicero.....	554,992
Danville.....	357,291
Decatur.....	1,576,691
East St. Louis.....	402,884
Elgin.....	676,686
Evanston.....	2,703,050
Granite City.....	75,984
Joliet.....	573,618
Maywood.....	135,766
Moline.....	1,233,747
Oak Park.....	715,475
Peoria.....	3,161,019
Quincy.....	214,574
Rockford.....	1,177,930
Rock Island.....	914,655
Springfield.....	1,688,994
Waukegan.....	785,279
Total.....	\$73,363,831
Non-residential.....	29,231,500
Residential.....	30,037,838
Repairs.....	14,094,493

¹U. S. Dept. of Labor, Monthly bulletins on Building Construction, 1938.

TABLE 25.—VALUE OF CLAY PRODUCTS, 1935-1938

Class	1935	1936	1937	1938
Structural and refractory clay products.....	\$4,555,624	\$8,625,364	\$8,711,062	\$5,047,320
Pottery.....	2,264,521	2,888,047	3,042,084	2,236,326
Total.....	\$6,820,145	11,513,411	11,753,146	7,283,646

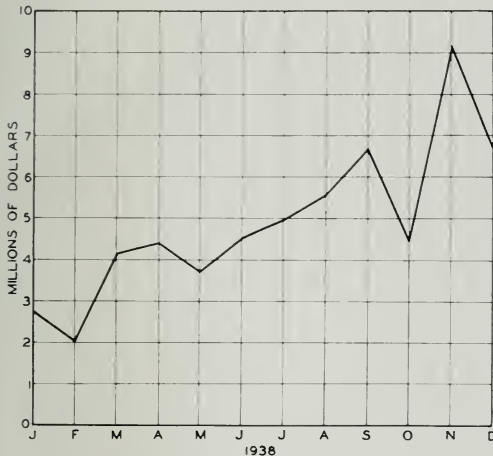


FIG. 3.—Value of building permits issued in 23 Illinois cities, by months, in 1938.

CLAY PRODUCTS

The value of clay products, including pottery, amounted to \$7,283,646. A decline in building operations beginning in late 1937 and continuing into early 1938 adversely affected production among brick and tile plants. The value of clay products manufactured in Illinois in the years 1935 to 1938 is shown in table 25. Production of clay products, by classes, in 1938 is shown in table 26.

TABLE 26.—PRODUCTION OF CLAY PRODUCTS, BY CLASSES, in 1938

Product	Quantity	Value
Common brick (M)....	143,000	\$1,450,000
Face brick (M).....	63,500	1,090,000
Hollow brick (M).....	53	695
Hollow building tile (tons).....	86,247	396,799
Vitrified brick or block for paving (M).....	6,627	176,158
for other purposes (M).....	1,511	23,650
Drain tile (tons).....	75,162	513,294
Fireclay products.....		49,240
Refractory cement (clay) (tons).....	88,853	209,014
Clay sold, raw or prepared.....		194,207
Other clay products (except pottery) ¹		943,263
Pottery.....		2,236,326

¹Includes terra cotta, sewer pipe, flue lining, wall coping, and nonclay refractories.

Shipments of common brick, face brick, and hollow building tile increased generally throughout the year except for a sharp decline in the month of December. The trend of shipments of these three products is shown in table 27.

ILLINOIS MINERAL INDUSTRY

TABLE 27.—SHIPMENTS OF CLAY PRODUCTS IN ILLINOIS
BY CLASSES IN 1938¹

Month	Number of plants	SHIPMENTS		Stocks on hand at end of month (Thousands)
		Thousands	Value	
COMMON BRICK				
January.....	40	6,605	\$ 69,224	69,948
February.....	40	7,456	78,485	63,609
March.....	39	11,204	117,690	53,016
April.....	39	12,418	127,758	45,026
May.....	39	13,230	138,300	49,409
June.....	40	15,081	154,039	50,042
July.....	40	15,286	154,139	42,296
August.....	38	15,936	161,371	36,485
September.....	38	14,857	154,197	50,750
October.....	38	16,643	173,070	68,703
November.....	38	16,176	164,136	67,018
December.....	38	13,885	138,671	70,976
Year.....		158,777	1,630,980	
FACE BRICK				
January.....	20	2,054	35,299	34,036
February.....	20	2,125	35,897	32,960
March.....	20	3,897	68,848	29,116
April.....	19	5,257	91,503	28,640
May.....	19	5,287	91,428	28,588
June.....	19	6,033	108,486	27,166
July.....	19	5,683	99,795	25,636
August.....	17	5,319	91,419	27,007
September.....	17	4,851	84,496	27,783
October.....	17	6,100	104,619	27,643
November.....	17	5,207	90,301	27,247
December.....	17	3,982	70,789	29,141
Year.....		55,795	972,880	
HOLLOW BUILDING TILE				
		(Tons)		(Tons)
January.....	18	3,310	17,495	35,502
February.....	18	2,823	14,190	35,248
March.....	17	4,747	25,886	33,376
April.....	17	5,456	30,213	31,893
May.....	19	5,539	31,178	30,734
June.....	19	5,785	31,322	32,141
July.....	19	5,583	30,236	33,861
August.....	19	5,260	26,416	37,534
September.....	19	4,845	25,638	41,002
October.....	19	5,267	29,246	42,143
November.....	19	6,558	36,258	43,077
December.....	19	4,874	27,964	40,100
Year.....		60,047	326,042	

¹U. S. Bur. Census, Structural Clay Products, Monthly bulletins, 1938.